

AVIATION

The Oldest American Aeronautical Magazine

AUGUST 16, 1926

Issued Weekly

PRICE 15 CENTS



Through the Clouds in a Jenny

Orville Morrow

VOLUME
XXI

SPECIAL FEATURES

NUMBER
7

HISTORY OF THE AERONAUTICAL ENGINE

THE START OF THE COMMERCIAL AIRPLANE RELIABILITY TOUR

GARDNER PUBLISHING CO., Inc.
HIGHLAND, N. Y.

225 FOURTH AVENUE, NEW YORK

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office, at Highland, N. Y.
under Act of March 3, 1879.



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AND MOTOR CO., INC.
GARDEN CITY, N. Y.

AUGUST 16, 1936

AVIATION

VOL. XXI, NO. 7

Published every Monday

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GARDNER PUBLISHING COMPANY, Inc., Publishers

BUSINESS AND EDITORIAL OFFICES: 225 FIFTH AVENUE, NEW YORK

CABLE ADDRESS: AEROSOC

Publication Office

HIGHLAND, N. Y.

Subscription price: Five dollars per year. Canada, foreign, air delivery, single copies, \$1.00 each. Back numbers 25 cents. Copyright 1936, by the Gardner Publishing Company.

Single copy Monday: Four cents (one day previously). Entered as second class matter Nov. 22, 1926, at the Post Office at Highland, N. Y., under act of March 3, 1879.

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AVIATION

VOL. XXI

AUGUST 16, 1936

No. 7

Correspondence Schools

JUST AS the war surplus material is being gradually used up, so also the number of pilots and mechanics who were trained during the War is gradually becoming more limited and a new supply of men must be made available.

Encouraging young men to enter aviation and an intelligent training for them is a matter of great interest not only to the aviation operators but also to the government. Among the various agencies which are availing the younger generation for aviation and giving them training, the correspondence school is beginning to take an important part.

No correspondence school claims to turn out a pilot as thoroughly trained mechanic, but they do claim to give a good theoretical training in the fundamentals of aviation and aviation mechanics. The man who has gone through the course of a reliable correspondence school and has really studied and remembered what he has read, will not only progress faster if he goes into aviation but will also be more valuable to the trade than if he had to learn everything by using courses as from his own observations.

The correspondence school also takes a very firm hold on the United States, and courses have been worked out for practically all the trades. The technique of instruction, through correspondence has reached a high state of development, and though aviation is a new source, there is much standard practice in repair and maintenance work which is no more difficult to learn than in any other trade.

The reliable and well conducted correspondence school is serving an excellent purpose in this field.

The Industry and Engineering

PROGRESS in the safety and efficiency of planes has been made both by correcting errors in machines which have actually been flown, and by developments worked out through research in the laboratory or wind tunnel. A consideration of which these two systems have been foremost in the matter of development, is like the difference in as to which came first—the chicken or the egg—but there is no comparing the fact that each method is absolutely necessary to the other. There is also no doubt that there would have been more aeronautical progress had the theoretical and practical study of a fly been in close communication with each other.

For this reason the joint meeting of the R. A. C. A. and the engineers representing the aeronautical industry which was held in June was more than a matter of passing interest, but it represented a step in the right direction. What the industry needs more than anything is recognition. The three are few aeronautical firms which have sufficient funds to do any real research work or to do more than rely on a conservative development of a given design problem. When the engineers of some

manufacturing firm dare go to a wind tunnel, he usually goes with an airplane design to be tested or with some specific problem to be solved. There is, as a rule, no time for the discussion of theory and the large problems are not touched upon. Most frequent meetings between the men who work in laboratories and the men who actually design planes would stimulate the interchange of ideas, and each would go back to his work with a somewhat broader outlook.

The engineer who works for a successful firm which must make money gradually gets up a conservative frame of mind where he can think only along lines of improvement as dated. If he designs a plane which follows the lines of his previous plane but with the improvements suggested by practical experience he is almost sure to be successful, whereas if he invents and along radical lines he is quite likely to produce a very expensive failure. The man who works in the laboratory is, on the other hand, apt to get into the habit of thinking along lines of theoretical aeronautical development and to ignore the present-day limitations of the mechanical. Meetings at which representatives of the manufacturers and those working on new motor wind tunnels would meet and read papers, discuss problems and generally get acquainted would be of real value, for personal contact brings results which cannot be accomplished by the written word.

Competition That Hurts

THERE IS probably nothing that is more irritating to the pilot who has spent much time, effort and money in getting a local landing field and a plane to operate than to have some barnstorming pilot come to town and take the passenger business away from him. The visiting pilot gets the reward of the hard work done by the local flier who has maintained the town in aeronautics. The barnstormer has the advantage of not having to establish and maintain a reputation. He can suddenly in moments and back flying to drive the crowd and, when he has carried the passengers interested by this sort of exhibition thing, he moves away, often leaving a trail of unpaid bills.

Such visits are very hard on the newly established pilot but competition of a similar sort exists in all other fields and is not a matter which can be abolished by law. Only a sense of decency can prevent the barnstormer from pushing on the other man's property. It would save friction and wasted effort if pilots would respect each other's territory, especially when a pilot is newly established in a locality. After a pilot has been established in a locality for some time he will have built up a reputation for good flying and a well maintained airplane and there will be no liability of the barnstormer being able to take much business away from him. The visiting pilot may have methods of getting business from which the local pilot may learn a considerable amount and a little competition may not be altogether harmful.

History of the Aeronautical Engine

Basic Features Almost Unchanged Through Development Years.

By C. FAYETTE TAYLOR

Mechanistic Institute of Technology

LIKE MOST of our modern conveniences, if I may take the liberty of describing it as such, the aeronautical engine has an interesting history, unchangeable aside to the layman and to the engineer. It is with the hope that such a history, in every brief form, will be of interest that this article is written.

As far as can be ascertained, the first use of mechanical power in flight was by Leonardo da Vinci, (1454-1512), who is said to have built successful model helicopters actuated by hand springs. It is interesting to remember that the elastic spring remains the generally accepted form of motive power for airplane models. The first application of steam as power for an airplane was made by W. E. P. Wright, in 1849. In 1842, in the form of a model helicopter employing steam jet motion to turn the propellers. In 1840 another flight was made by a model airplane propelled by a steam engine, constructed by J. J. Langley (Brook). Langley built several successful steam driven models, the first of which flew in 1848.

First Lighter-Than-Power Flight

Power flying with lighter-than-air machines started with a successful flight by Hindenburg, (Germany), using a helium propelled by a 5 hp. engine, operating on the same principle with helium gas as float. The first gasoline engine of the modern type to fly was a German Diesel, near Lonsdale, France, mounted in a dirigible constructed by Bessmeyer and Weiffert, in 1879. These two men were probably the first mortuary to power flight, having been killed by a hydrogen vapor



Fig. 1. Wright four cylinder radial in Langley 14 model.

fire which occurred in their dirigible 25 years later. At least in our country (Cincinnati, Ohio), before an airplane motor was used in hydroaerobics flight, but it has remained for the gasoline engine to make possible the initial success and subsequent development of the airplane.

The first heavier-than-air flight of an internal combustion engine was that made by Langley's quaternary model in August 1894, only three months before the Wright Brothers' flight. The engine used is shown in Fig. 1. It was designed by Charles M. Prentiss, who supervised much of the mechanical design of Professor Langley's airplane. The engine is a five cylinder air-cooled radial of 2 1/4 in. bore and 3 1/2 in. stroke and developed 3.2 hp. at 2300 r.p.m. for a short period. Its weight with carburetor, igniter and small storage battery was only 16 lb. With this engine, the model made a steady flight of short duration, the engine finally

no longer to carburetor trouble in only modern fashion. The first-cylinder engine* designed and built in 1892 by Mr. Maudsley for the Langley "aerobics" never actually participated in a successful flight, but was so far in advance of its time in design and construction as to be worthy of special mention. Fig. 2 shows a radial view of this engine which was a 5-cylinder water-cooled radial of 5 in. bore and 5 1/2 in. stroke in the first block it developed 32.4 hp. at 850 r.p.m. The

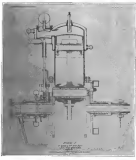


Fig. 2. Design of Maudsley five cylinder radial built for Langley's full size "Aerobics".

weight, dry, was 125 lb. or 24.4 hp. per lb., while the complete power plant with all accessories, including two belt flywheels, radiators and tanks, weighed 347.5 lb. or 14.5 hp. per lb. These weights do not suffer by comparison with corresponding weights of airplane engines of modern type. This engine completed a dynamometer test of 30 hr. at full power in excellent condition. For the year 1898, this was a performance little short of the marvelous, and reflects great credit on the designer. The only really obsolete feature of the engine in the extensive operation of the radial motor, the crank when being operated by the main cam and push rod arrangement. The cylinder was made of drawn steel, 1/16 in. thick and was laid with 1/16 in. of cast iron. The pistons were made of steel. The crankshaft was quite conventional in construction. At the time it was built, there was no good means of applying oil to the cylinder and main parts, such as high torque coils and spark plugs, had to be built with the engine. This engine was assembled and tested a short time before the first power flight of the Wright Brothers at Kitty Hawk, (Capehart, 1903).

The original specification of the Wright Brothers for an engine for their airplane was that it should develop not less than 8 hp. and weigh not over 600 lb. Only one motor had any way of meeting their specification. It offered a

one cylinder engine weighing 150 lb., but, in an advertisement, the Wrights decided that it would probably not be able to develop 8 hp., and proceeded to build their own engine. Fig. 3 shows the original Wright engine. It had four cylinders of approximately 4 in. bore and 6 in. stroke, with automatic inlet valves. The fuel was supplied by a pump which sprayed the gasoline into the inlet manifold. Ignition was by a single magneto. Two cylinders were built first and tested on a temporary frame. After that proving that the engine was capable of developing over 8 hp., the complete engine was built. This would develop steadily 12 hp., although when first started 18 hp. was obtained for a few moments. The engine weighed about 280 lb. or 18.7 hp. per lb. without accessories. While the engine was not overly an advanced a type in the contemporary world, it stands as the one with which controlled heavier flight was first achieved in a heavier-than-air machine, and, as such, becomes one of the landmarks in aeronautical power plants.

While Langley was forced to abandon his work, and the Maudsley engine was set aside, the Wright Brothers improved their engine rapidly building four, six, and eight-cylinder types up to 75 hp., with weights as low as 5 lb. per lb. for engine alone.

The Wrights having shown the way, the development of airplanes and their power plants was soon undertaken by a number of powers in both Europe and America. The first in this country was General Wilbur Wright and the Wrights, while early in the European engine, mainly those of Anzani, were secured.

Blern's Cross-Channel Engine

Fig. 3 shows the Anzani engine which was the first to cross the English Channel, being by Blern in 1899. The three cylinders, operating on a single crank, delivered 240 hp. at 1000 r.p.m. and the engine weighed approximately 6 lb. per lb. Another landmark in aeronautical engine advancement was reached when the Blern engine landed safely on British soil.

The development of the aircraft engine proceeded steadily, if slowly. At the time of the outbreak of the war, there were many different makes and types of engines, but certain types had come to the fore as being especially suitable for aircraft work. Of the five engines entered in the Gordon Bennett race, five of them were of the type which were used in the war. There were a number of successful aircraft engines at the time, however, particularly those of French manufacture. Table I gives the approximate statistics of the most representative engines at the period immediately preceding the war.

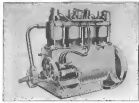


Fig. 3. Wright four cylinder engine.

The history of the aeronautical engine during and since the war is too wide a subject to require detailed description. From the statistics as outlined in Table I, it will be seen that the war caused a sudden and rapid development, especially in

engine war, power, and speed of rotation. The end of the war found the German vertical air's developing at high as 2000 hp. with weights as low as 3 lb. per lb. and with remarkably low fuel consumption. Very large engines were represented by the German, British, and Italian, and the Japanese. The Japanese was the highest speed engine of that time. These engines weighed from 2 to 3 lb. per lb. The principal types brought out by the war were the water-cooled V-type type engine



Fig. 4. Anzani engine and Blern's cross-channel flight.

of high speed, last represented by the 200 hp. French Hispano engine, and the large water-cooled radial type engine such as the Liberty, Blern, and Blern. The air-cooled engine, as represented by the "Blern", and delivered in three and the stationary cylinder air-cooled type had not kept pace with the development of the other type.

The period since the war has been marked chiefly by continued increase in size, power, and speed of the water-cooled V-type, and by the advent of the radial air-cooled engine in sizes up to 450 hp., this type having come very rapidly into favor during the past two years. The use of the propeller reduction gear has also increased of late, many of the large water-cooled engines incorporating this feature.

Summary

In tracing the progress of the aeronautical power plant, one is immediately impressed with the rapid advance of change in the latest features of mechanical component or last type of engine, representing the progress of the engine of the engine in the cylinder have remained relatively the same since the days of Otto. The development rapidly led to perhaps the only mechanical development outside of pure mechanical advancement. The internal-combustion engine supercharger may be said to have passed the experimental stage in both America and France, and is a possibility of the greatest utility, of not unimportant, significance. Much progress has also been made with mechanically driven centrifugal and positive displacement types, but these have not passed the experimental stage.

What have been the controlling factors in the development of aviation engines up to the present time? An steady state, there has been a striking lack of fundamental progress. The present, in other is a large degree to the excessive advance in materials of construction, especially in the shape of aluminum and the special alloy steel. There are now available several

phased, the drawing of a formula from which to determine power seemed by the experts to be extremely difficult if any degree of impartiality among the various types of airplanes was to be obtained. The formula selected for this year's Tour is as follows:

$$\frac{\text{Constant load} \times \text{Speed (m.p.h.)}}{\text{Stroke Time} + \text{Lift-off Time}} \times \frac{50}{\text{Eng. Dept.}} = \text{Power}$$

Notes:—Think this means the time in seconds between wheels touching and engine making its first full stroke and the moment in taking off for the first time.

It was the stick and control trails which were carried out on Friday, after which no further action could be considered. The lines straightened, which, when it was seen the day before in the manufacturing shop of the Hines Aircraft Co., was not even rigged up, started a little after 6:00 p.m. and just got its stick and control trails done in time. It would have been a great shame if this little machine had been completed for it is one of the new commercial three-place types of this year and is certainly one of the best looking planes in the Tour, resembling a small personal plane more than anything else, although the plane where the "D-12" goes is filled with an OX-6 engine. Undoubtedly, there is likely to be a

number of these three places around the country shortly. The Hines Aircraft Co. has not been in existence very long but a few months ago it is manufacturing ships at Wynnton, Mo., it is enough to satisfy one that the Hines is the embodiment of the best materials put together in the best workmanship manner to produce a first class airplane. John Hines, the president of the Company, is to be congratulated on the design of the plane. It is hoped that shortly it will be possible for America's to describe this machine in detail but for the moment it is referred to as just a small steel tube airplane and wind construction wings of Clark Y section and a solid side reinforcement. Passenger entrance to the forward cockpit is by means of a door.

Stick and Control Trails

To return to the Tour itself, the landing and take-off tests started as soon as the machines were loaded up successfully. It will be recalled that the constant load for the Tour comes of 8.5 lb. per sq. in. as an engine displacement and that for over 20 lb. carried there must be one cubic foot of cabin, cockpit or other cargo space; if not, the load must be reduced or cut off. The winging-in having been completed, the timers and checkers, with glasses in position, had recognized mostly from the 187th Observation Squadron, Madison, Wis. had started out for the command of Major Fred G. Ryan, and the Detroit Flying Club, obtained the following details for the entries regarding stick and control trails in smooth. (This compares the complete entry, but of the Tour with the plane's respective engines and pilots and passengers.)

No. 1—Louis Verville Aircraft, pilot, Louis G. Minter; no passenger. Control (take off) 12.6 seconds, stick leading 10.1 seconds.

No. 2—Travel Air, pilot, Walter Beach, passenger, Bruce Goldthorpe and Richard Horne. Control, 9.4, stick, 8.

No. 3—Travel Air, pilot, C. E. Clark, passenger, Edward White. Control, 9.4, stick, 7.4.

No. 4—Ford.

No. 5—Dupont, pilot, B. D. Boland. Control, 14.9, stick, 8.6.

No. 6—Eaton; pilot, J. B. Williams. Control, 11.4, stick, 10.2.

No. 7—Ford, pilot, F. D. Robinson, passenger, Kenneth Boudier, Harold Byers, Frank Bugar, Curtis E. Munch and Raymond Stevenson of the Dept. of Commerce. Control, 11.4, stick, 8.8.

No. 8—Ford, pilot, Lewis. Message to passenger—Control, 13.0, stick, 7.8.

No. 9—Cody, etc.

No. 10—Curtis, pilot, Gary Jones. Control, 10.2, stick, 10.

No. 11—Monroe Aircraft, pilot, Harvey H. Monahan, passenger, J. P. Mearns. Control, 10.6, stick, 8.

No. 12—Franklin, pilot, Richard H. Deppa, 2nd passenger, S. W. Johnson. Control, 20.6, stick, 11.6.

No. 13—Woodson, pilot, Russell Houser, passenger, H. V. Hughes and Ray Stewart. Control, 18.2, stick, 12.

No. 14—Woodson, pilot, Philip H. Demore, passenger, Frank Danksell and Don Henshaw. Control, 12.6, stick, 12.

No. 15—Woodson, pilot, H. H. Galloway, passenger, Harry Taylor. Control, 20.6, stick, 12.6.

No. 16—Hess, pilot, William Hines. Control, 12.2, stick, 10.

No. 17—Waco, pilot, J. W. Lattin, passenger, Ross Smith. Control, 9.4, stick, 11.

No. 18—Waco, pilot, J. G. Knapp, passenger, L. A. Kuhn. Control, 21.6, stick, 12.

No. 19—Pittman, pilot, J. O. Pat, passenger, J. McDonald, of the Dept. of Commerce. Control, 12, stick, 12.6.

No. 20—Pittman, pilot, Harold F. Pittman, passenger, Agave E. Leman. Control, 11, stick, 16.

No. 21—Swales, pilot, C. M. Barlow, passenger, O. H. Harkness. Control, 24, stick, 9.0.

No. 22—Tee, pilot, A. F. Ewing. Control, 19.6, stick, 15.

No. 23—Eaton, pilot, Anne Berrier. Control, 11.6, stick, 10.

No. 24—Eaton, pilot, Ed Lema. Control, 10.6, stick, 12.

No. 25—Travel Air, pilot, C. R. Linn, passenger, Ed. Charles Laffey. Control, 20.9, stick, 10.

No. 26—Waco, pilot, J. F. Kiddle, passenger, Mrs. Susan H. Koffey. Control, 4.8, stick, 11.

No. 27—Stinson, pilot, Eddie Stinson, passenger, W. A. Mays, John and Edward Stinson. Control, 13.4, stick, 7.

The only women on the Tour is Mrs. Susan H. Koffey, passenger with John Paul Kiddle at Cincinnati, in the Waco. She is 38 years old. Mrs. Koffey is a student of flying herself and is the first woman to be licensed, reports to have followed long on the air in "solo" when she gets home. After that the plane on which she made the Tour will be her own.

The power given in the foregoing table are of more than power interest for it is used to reflect that, according to the



From left: 1. The first of the Commercial Airplane Building Tour. 2. M. J. Whitney of the Hines Aircraft Co. at the Hines Aircraft Co. 3. The second of the Commercial Airplane Building Tour. 4. C. E. Clark of the Travel Air Co. at the Travel Air Co. 5. The third of the Commercial Airplane Building Tour. 6. The fourth of the Commercial Airplane Building Tour. 7. The fifth of the Commercial Airplane Building Tour. 8. The sixth of the Commercial Airplane Building Tour.

REMEMBER — NATIONAL AIR RACES, SEPT. 4-11



From left: 1. The first of the Commercial Airplane Building Tour. 2. M. J. Whitney of the Hines Aircraft Co. at the Hines Aircraft Co. 3. The second of the Commercial Airplane Building Tour. 4. C. E. Clark of the Travel Air Co. at the Travel Air Co. 5. The third of the Commercial Airplane Building Tour. 6. The fourth of the Commercial Airplane Building Tour. 7. The fifth of the Commercial Airplane Building Tour. 8. The sixth of the Commercial Airplane Building Tour.

REMEMBER — NATIONAL AIR RACES, SEPT. 4-11

One of the most interesting planes in the Tour is the United States No. 2, in which, incidentally, U. S. President Coolidge, together with Robert Byrd, who is returning around the Tour in the machine, piloted by Walter Peltz of the Travel Air Manufacturing Co., Wright, Pa. The machine, known as the Pioneer Sherman, is one of the most beautifully equipped machines we have ever seen. It is similar to a standard Travel Air but has a number of new features, which accommodate the pilot's comfort as well as to the passenger's enjoyment. The plane is fitted out to a complete traveling exhibition of all those comfort accessories which are made by the Pioneer Instrument Co. of Brooklyn, N. Y. The instrument board in the rear cockpit carries the two Pioneer control instruments which not only take up so much less room than the standard type but are so much more clearly and easy to read. The plane is equipped with a new Eastern Indicator system which has eight small lights to show long distance lights during night hours. It also has warning lights on the fuselage and wingtips, beautifully arranged in any streamlined travel arrangement. The Pioneer Company said that many people throughout the Tour are attracted to this flying odd lot of the last word in airplane instruments.

The Holt Verdelle Airplane, based on it is in the Due Color plane and extremely so. It is a standard, powerful, very pretty pattern, with its brilliant metal fuselage which reflects almost like a mirror. The machine has the forward cockpit arrangement. It has the most beautiful line that an airplane could have and is a model of the class in that Mr. Verdelle's latest plane which set up speed records a few years ago.

Another very interesting plane is the Raytheon, two of which are in the Tour, owned by John Raytheon. The Raytheon is another very nice looking plane designed around a Curtiss OX-5 engine. Of course, at the Ford Airport it should have been one of the very best there, since it is a machine which is constructed at an altitude of 8000 ft. and has all its flight instruments set at this height. The plane, in a well-known, is produced by the Alexander Aircraft Co. of Denver, Col.

The Only Three-Engine Plane

Perhaps the plane which attracted the most interest in the Tour was the new Ford-Wright three-engine plane equipped with three Wright Whirlwind engines. In appearance this plane is very similar to the standard Ford standard plane and many believe it to be its duplicate copy of the standard or a slightly larger model. The new machine, however, entirely of new design but every endeavor has been made to produce a plane which matches as closely as possible the single-engine Ford machine. The engines are arranged under the wing in a manner very similar to that adopted in the three-engine Ford plane and the undercarriage too is of very similar type. Two machines, being the only three-engine plane, is not competing for the Ford Trophy.

The only real odd horse in the Tour is the Curtiss designed wing broke with wing radiators and piloted by Gary Jones. This machine will be remembered by all who have attended the last two National Air Race events. It usually pulls a winner in one of the National Air Race events but how it will show up as a Curtiss Reliability Tour will be interesting.

The Mercury Airline, of the Aerial Services Corp., Hartsfield, N. Y., is, in fact, the Mercury Air Line. It is a standard, powerful, very pretty pattern, with its brilliant metal fuselage which reflects almost like a mirror. The machine has the forward cockpit arrangement. It has the most beautiful line that an airplane could have and is a model of the class in that Mr. Verdelle's latest plane which set up speed records a few years ago.

which extend along the entire trailing edge and serve the purpose of lifting as well as help for reducing the turbulence and landing run. Nostrils are provided whereby the cleanness in the center of pressure caused by a movement of the flaps is automatically compensated for by a movement in the machine section.

There are three Waco machines in the Tour and all three will undoubtedly perform well under anything very unusual happens. Nos. 23 and 24 are the two Pietenso plane—two, the Pietenso and the other a new development of Pietenso, Aviation Inc. It is a three-place OX-5 engine plane, the wings and body of which are Curtiss Deltas with a fuselage, which has been designed by Agnes R. Lazenby, designer of the biplane and also was a passenger in the machine which is piloted by Harold F. Pietenso. The machine is called Conving.

Entry No. 25, the Ford, is a plane produced by the Detroit Airplane Co. and equipped with a Curtiss C-8 engine. It has Martin's wings, with a fuselage and undercarriage which resemble very closely those of a Standard.

Of the other entries, the Swallow is well-known as one of the commercial planes which have made aerial service in this country. The Super Swallow is the latest development of the Swallow Airplane Co. of Wichita, Kan., and is a really beautifully constructed and finished plane. Entry No. 27, is the Shuman Detention, the four-engine color machine which has already done a good deal of flying. The machine is equipped with the Wright engine and undoubtedly before the Tour started, was sold to the Wagon Oil Co. of Detroit.

Perhaps the star turn of the start of the Reliability Tour, although it is absolutely nothing to do with the Tour, was the appearance of Mr. Ford's latest airplane product, the little "Vivian" plane which has been mentioned in almost every daily newspaper in the country, lately. Little has been said about the plane as it is a very handsome product and for some of its being built, until it actually appeared. The machine, which was designed by Otto Kopper, formerly of the Massachusetts Institute of Technology, is a very small, single-seater machine with a single undercarriage and an armed 50 hp engine. It even just to pilot, at the moment Harry Hawks being the only one who has flown the machine. He has it in a personal job for his plane. The machine has a very sharp take-off, thanks to a very fast running propeller set at the private garage in which Mr. Ford keeps the machine, and the air. It has no tail wheel but the plane is small and has a tail wheel which is very small and is set on the ground. There is a small tail wheel on this wheel.

Tour Schedule

The route and schedule of the Reliability Tour is as follows, together with the distance and times of arrival and departure:

	Days	Arrive	Leave
Aug. 1	Depart in Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 2	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 3	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 4	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 5	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 6	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 7	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 8	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 9	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 10	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 11	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 12	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 13	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 14	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 15	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 16	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 17	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 18	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 19	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 20	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 21	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 22	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 23	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 24	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 25	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 26	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 27	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 28	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 29	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 30	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.
Aug. 31	Return to Rochester (New York Airport)	9:00 a.m.	10:30 a.m.

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Slide Slips

By ROBERT A. GORDON

At the time of this writing, the Sikorsky Aero-Admiral plane is getting the building touches and promises to give us something to talk about when the test flights are in order. The perfect ground slaps at the door of the hangar under a look as if the concrete beams have been around already like wings, rudders, landing gear and other odd bits to add to their old bodies. All human beings seem to be affected to some degree with this disease to avoid all sorts of work which seems to be worthless to everyone but the building person from whom it was stolen, and we suppose the radical course is to keep everyone clear of the machine in that case.

We have heard that there was only a bit of trouble in this way when the SC boats were built for the first trans-Atlantic flight and that carpenters and lots of other people were made very sick repeatedly both before and after the flight. Airplane slides seem to be particularly delicate and we suppose there must be a dozen slide holders every where "positively" around the Admirals in the RCAF. In the years to come there will probably be as many of these slides as slides as the "spreadsheet" slides we have today, which unfortunately come over in the Mayflower.

A few years ago a Yankee visited the country with a flashlight and got out a lot of newspaper publicity for him plan to have the whole country dismantled. After a few days playing around with it he was unfortunate enough to land in a tree on a New Jersey golf course. He climbed down out of the tree and walked off to a nearby village to get someone to dismantle his plane for him. If he had his own knowledge of the American aviation leader it is not hard to see how he would have jumped under that tree with a sword-off dagger, for when he returned that was not such a light weight, a few spurs and straps. Carpenters, masons, plasterers, glaziers and many other miscellaneous items had apparently fallen out of the tree like plums into the hands of the crowd underneath, and, for as we know, the only solution was the good ship got out of it was to express his opinion of Americans in general, in terms which they could not even appreciate.

Our friend, the Intrepid Pilot, was in to see us again this week and in great concern about the news that Captain Peck's Sikorsky plane has been found inside the cabin, by an inferior demolition, with webbing and Epinephrine bottles—and, gold and silver being the main color theme. He said he would not mind if it was no further than this and is worried that these colors will be just a stepping stone to some of the new colors being developed for future use. He "New Look", "crushed velvet", "old burgundy" and "Pewee" must. They probably wanted to keep up with the style but when his Jersey model came along for the "Swallow" slide, his instincts, had so popular for kids, stockings, etc.

Speedy Week on Hangars

On the morning of July 5, the efforts of the P.T.T. Air Service, Inc., resulted in erecting immediately an air station built out of the most modern type at Haver Field, Washington, D.C., the custom terminal of the Philadelphia and Washington passenger air mail route. The field was to be inaugurated on July 25.

They rolled upon William E. Arthur & Co., Inc., in erecting the building completely, ready for use, within five days.

At midnight on Friday, July 5, Mr. Arthur received a word about from the efforts of the P.T.T. Air Service to proceed at once with the construction of the building. Being a part of the engineering service of his company, Mr. Arthur chartered a plane at Philadelphia and flew to Washington, starting delivery of materials for the work within two

hours. By Saturday, July 10, at midnight actual construction had started. On Thursday morning, July 15, at 11, the building was completed, but, on account of the heavy rain, inauguration of the field did not take place until July 16.



Below, the Haver Field, Washington, building at the P.T.T. Air Service in Philadelphia, constructed by Wm. E. Arthur and Co. in two days under rain delay. Above, a plane in service in which rapid progress is noted by Mr. Arthur.

This speed in construction is remarkable inasmuch as the building is 54 ft. long, 23 ft. wide, and built of numerous concrete foundations and floors, most of which are placed under a roof and a steel truss system. The building has no solid walls, but, instead, is made of steel truss system, and is plastered with a special and made on the walls and ceilings. All plumbing and electrical work is complete.

The building consists of a hangar room and a 15 ft. x 10 ft. Ward Department, private office and public telephone booth, waiting room for passengers with a messenger and refreshment stand, well furnished rest room with a large shower panes which opens out to a large terrace which was completely built within the two weeks.

There are two large gates at the entrance of the terrace in the front field, and there are arranged that plane may be brought up to the open gate in such a position as to accommodate passengers entering the plane from injury by the passengers.

William E. Arthur & Co., Inc., are also building the most modern hangars in the country at this field.



These two photographs are of various views of another example of rapid construction at Haver Field, Washington, D.C., by Wm. E. Arthur and Co. The photograph shows the building at the Haver Field, constructed by Wm. E. Arthur and Co. and shows the side of construction after two days. The hangar, which is a steel and concrete structure, was completed and occupied after fourteen days of work. See AVIATION, July 26, page 126.

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Office Boy Takes a Long Airplane Ride

The office boy is a pretty hard subdued to surprise, at least so it is the case in the employ of the National Air Transport, Inc., at Chicago. The youngster reportedly had collected his supply of passengers in his endeavor to get away from the office in the afternoon to witness the White Sox at the Cubs game last, and also knowledge had pulled no him. At any rate, he suddenly became charmed with a wild desire to take an airplane ride. For downright persistence a powerful argument is as a show by himself. The N.A.T. office boy, Jerry, was down the airplane and told himself confidently under the road bars in the small compartment of the Curtiss Carrier Pigeon and wanted to the pilot to "let 'er go!" Modern, he, had in attendance. Not did Kansas City. The boy stood in his place until Dallas, Tex., the terminus of the route, was reached.

After being in the night of Dallas and concluding that it was not quite so bad, there in its "good old Ohio," the youngster again told himself in the seat compartment of a second Curtiss Carrier Pigeon, and in the time reached Chicago.

Rehearsal, N. Y.

By M. D. Seale

The post office in Rochester, N. Y., has been notified in connection with the opening of a new flying field, the beginning of a survey as well of establishing an air mail station, and the publishing, by Mayor O'Neil, of the "plans" which were to be performed in the air over Bolton Field.

The new field is the second to be opened in this city, the first being Bolton Field from which have surfaced all the following: Eastern City, one midway flight. The new one is on Monroe Avenue, just outside the city limits. The operators are Spencer M. Fawcett and Charles Witherby, who had from the flying station at Daytona Beach, Fla. His presence is the son of Milton S. Fawcett of the Eastern City Company, Rochester. It is the intention of the two young men to have a permanent sales and service field here and operate in aerial photography and passenger carrying.

The first step in Spencer O'Neil's program for establishing an aerial mail station at Bolton Field was taken when Harold W. Baker, commissioner of public works, Stephen D. Story, director of the Bureau of Municipal Service, and W. H. O'Neil, of the Chamber of Commerce, left for Cleveland to survey the landing station and flying field there. They will also visit Detroit.

A survey will be made preliminary to providing further data. Now that 25,000 persons were gathered at Bolton Field to witness tests in aerial aerobics which were to be performed by Charles D. Talcott and Victor Evans on a plane piloted by Lester R. S. Selden. In order to stop the exhibition was made to protect the lives of those assembled. Charles Mann of Hightstown, Md., representing a southern aircraft company, took the air in a Trim motor and had exhibited flying to take the place of the more dangerous stunts that had been proposed.

Wichita, Kan.

By Paul Henshaw

Both the factories, Swales and Travel Air, are now on their entries for the Ford Tour. The Swales Company will run a three plane and a Standard OX5 job. Travel Air pilots will fly the "Flying Classroom" and the Pioneer Investment Company, powered with a Whitcomb, and another Swales machine equipped with a Model E trim. Mr. Goldberg of the Pioneer Investment Company is here getting the landing license as the instrument of the "showman." Both the planes are equipped with tanks.

Despite the rivalry between camps at production of airplanes they show a friendly spirit toward each other. Clarence Glick, manager of the Municipal field, was up in the new Swales Travel Air and stopped in to visit the Swales field, when he was asked to fly the new Swales Swales.

The Swales people are fast approaching the fast-paced airplane. They have it at such a stage already that, after the plane leaves the factory, no technically trained pilot or flight instructor could manage to come together with the engine. It takes two engines, a small one and a (theoretical) change. (A Swalesman is one who tells people when they have done wrong.)

George Lyle of Lyle-Hoyt, Chester Field, Berks, Mass., Clark's field, is on his way to Pittsburgh. He and they are doing well at Western coast distribution for the Travel Air.

New Field Opened at Akron

By F. Colburn

Akron Air Port has just been opened by B. R. Wilson and Hugh C. Robinson, commercial aviators. The new field is located four miles southeast from the heart of the city. The half mile West of Springfield Lake up Akron and Mainland road and one fourth mile from any lands. The new field is long equipped with hangar and shop. The managers have been put into shape. Facilities and all may be had at present and repair service within the next few days. Robinson flying

Service headed by Hugh S. Robinson, has the commercial rights on field. Sergeant P. A. DeWane, old hands, passenger plane will be associated with Robinson. The Robinson Airplane Co. will fly field for test and demonstration.

An invitation is extended to auto country fliers to stop at the field. Also an invitation is extended to the Air Mail line to stop free of charge when they are on the Cleveland and Toledo Service.

Cleveland Airport, Ohio

By W. T. Shales

Many attendance celebration have visited and praised Frank Park Field within a few days. May they Shales Shales who was an aptly termed as a modern Columbus by the Cleveland Plain Dealer, along with his recent a few terms, Dallas, many generously understood mechanics and a host of Italian advisors was part of latter last Saturday. "Jack" Bailey, field manager at home, greeted him about the hangar and showed him the different management of the field, the various shops and maintenance. The Cleveland was deeply impressed with everything from the car to the main wing ground his desires.

Berry signed J. Paul Radin who was making Cleveland and asked him to give a little exhibition at his home. Radin, formerly Paul had been going the air thousands and thousands the third of a lifetime. He, on Friday night said, "nothing of commercial interest in the day afterward. When for the past three hours. However, Paul, who positively despises stunts, signed and took to the air. Far be it from me to attempt to describe his maneuvers. A stunt would drive him to the ground, or so it seemed, then with a most it would come straight up to the bottom. Radin, after Robinson's leaps, turns, and will be to include the complete aerobics glider.

General Vahle had walked away upon the request of Berry to inspect the food which he has prepared in Radin's kitchen, and after the inspection added that the wonderful pilot was, and Radin, had Paul had had himself seen to the

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be used by the Pioneer investors in a demonstration. In the first, look up in Walter Reed, General Manager of Travel Air, who will pilot the ship. Then, look up in the other guests in E. B. Goldberg, Pioneer Company representative, who will fly as passenger.

Correspondence invited

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